



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/054,243	01/24/2002	Hieronymus Andriessen	27500-76	3723

7590 05/21/2003

Joseph T. Guy Ph.D.  
Nexsen Pruet Jacobs & Pollard LLP  
201 W. McBee Avenue  
Greenville, SC 29603

EXAMINER

LE, THAO X

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 05/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/054,243

Applicant(s)

ANDRIESEN, HIERONYMUS

Examiner

Thao X Le

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Terminal Disclaimer*

1. The terminal disclaimer filed on 03/11/03 disclaiming the terminal portion of any patent granted on this application has been reviewed and is accepted. The terminal disclaimer has been recorded.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 8-12-14, 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US PUB 2002/0110701 to Wehrmann et al. in view of US 6048616 to Gallagher et al.

Regarding to claims 1, 14, 26, Wehrmann discloses a method for manufacturing a thin film light emitting diode device, see abstract and claim 1, comprising the following steps: forming a nanoparticle dispersion of ZnS [0062], coating onto a first conductive electrode (anode) [0075] with doped ZnS, applying a second conductive electrode (cathode), with the proviso that at least one of first and second conductive electrode is transparent [0076].

But Wehrmann does not expressly disclose ZnS doped with a luminescent center by precipitation from appropriate aqueous solution comprising zinc ions, sulfide ions and dopant ions, washing dispersion of doped ZnS to remove non-precipitated ions.

However, Gallagher reference discloses ZnS doped with a luminescent center by precipitation from appropriate aqueous solution comprising zinc ions, sulfide ions and dopant ions, washing dispersion of doped ZnS to remove non-precipitated ions, fig. 1, column 3 lines 55-67 and 4 lines 1-40. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the doped ZnS teaching method of Gallagher with Wehrmann, because it would have created faster light emitting material as taught by Gallagher, column 3 line 26-30.

The recitation 'Thin film inorganic LED' has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Regarding to claims 8-10, 21-23, Wehrmann discloses the method wherein the water-compatible p-type semiconductive polymer is a polythiophene [0050]/polyanion complex [0053] or polyethylenedioxythiophene [0097]/polyester sulphonate [0048].

Regarding to claims 11-12, 24-25, Wehrmann discloses the first electrode is an ITO electrode [0076], and second conductive electrode is an aluminum electrode applied by vacuum deposition [0089].

Regarding to claim 13, Wehrmann discloses a method for manufacturing a thin film light emitting diode device, see abstract and claim 1, comprising the following steps: forming a nanoparticle dispersion of ZnS [0062], mixing the dispersion of ZnS with water-compatible P-

type semiconductor polymer [0058]-[0062], coating mixture onto a first conductive electrode (anode) [0075], applying a second conductive electrode (cathode), with the proviso that at least one of first and second conductive electrode is transparent [0076].

But Wehrmann does not expressly disclose ZnS doped with a luminescent center by precipitation from appropriate aqueous solution comprising zinc ions, sulfide ions and dopant ions, washing dispersion of doped ZnS to remove non-precipitated ions.

However, Gallagher reference discloses ZnS doped with a luminescent center by precipitation from appropriate aqueous solution comprising zinc ions, sulfide ions and dopant ions, washing dispersion of doped ZnS to remove non-precipitated ions, fig. 1, column 3 lines 55-67 and 4 lines 1-40. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the doped ZnS teaching method of Gallagher with Wehrmann, because it would have created faster light emitting material as taught by Gallagher, column 3 line 26-30.

The recitation 'Thin film inorganic LED' has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

3. Claims 2-7, 15-20, are rejected under 35 U.S.C. 103(a) as being unpatentable over US PUB 2002/0110701 to Wehrmann et al. and US 6048616 to Gallagher et al as discussed in claim 1 and further in view of US 6379583 to Gray.

Regarding to claims 2-7, 15-20, Wehrmann does not expressly disclose the precipitation is formed according to the double jet principle whereby a first solution containing Zinc ions and a second solution containing sulfide ions are added together to a third solution, wherein the first solution also contain dopant ions, wherein the dopant ions are Cu manganese dopant ions and dopant ions are  $\text{Cu}^{2+}$ ,  $\text{Cu}^1$  and  $\text{Mn}^{2+}$  and wherein washing dispersion of doped ZnS is performed by ultrafiltration step and a diafiltration step or diafiltration step in the presence of polyphosphate or polyphosphoric acid compound to preventing agglomeration of nanoparticles.

However, Gallagher reference discloses the precipitation is formed whereby a first solution containing Zinc ions and a second solution containing sulfide ions are added together to a third solution, wherein the first solution also contain dopant ions, wherein the dopant ions are Cu manganese dopant ions and dopant ions are  $\text{Cu}^{2+}$ ,  $\text{Cu}^1$  and  $\text{Mn}^{2+}$  and wherein washing dispersion of doped ZnS is performed, column 3 line 55-67, column 4 lines 1-39 and column 6 line 10. In addition, Gary reference discloses ZnS doped is formed in aqueous phase, column 4 line 1-7, and solution contains manganese dopant ions and dopant ions are copper (I) or copper (II) ions, column 5 lines 25-40, to preventing agglomeration, column 5 line 59. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to combine dopant ions teaching of Gray with Wehrmann, because it would have created a stable nanoparticle and increased the band-gap (photoluminescence) as taught by Gray, column 5 line 55-65, column 7 line 6. Also, at the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the doped ZnS teaching method of Gallagher with

Art Unit: 2814

Wehrmann, because it would have created faster light emitting material as taught by Gallagher, column 3 line 26-30.

With respect to double jet principle, ultrafiltration in the presence of polyphosphate or polyphosphoric acid compound, Gray discloses the general procedure to obtain doped ZnS including isolation, fig. 1, and the washing with anti-agglomeration agents including hydrophilic or hydrophobic. The isolation obviously comprises filtration or ultrafiltration that is standard wet chemistry procedure, while Gallagher discloses washing in suitable solvent, column 4 line 37. Accordingly, it would have been obvious to combine the teaching of Gray and Gallagher with Wehrmann as claimed, because it has been held that where the general conditions of the claims are disclosed in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation. See *In re Aller*, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955). Also, such double-jet precipitation and ultrafiltration are well known chemical processes being described in various publications, for examples, US 525248 to Nishio et al column 9 line 33-36 of and in [0125] of US Pub. 2001/0039060 to Siiman et al, while both double jet precipitation and ultrafiltration is disclosed in column 6 lines 28-35 and column 12 lines 52-60 of US 5073303 to Reid.

#### *Response to Arguments*

4. Applicant's arguments with respect to claims 1-13 have been considered but are moot in view of the new ground(s) of rejection.

Art Unit: 2814

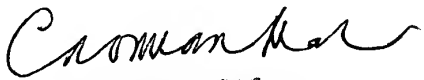
*Conclusion*

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao X Le whose telephone number is 703-306-0208. The examiner can normally be reached on M-F from 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M Fahmy can be reached on 703-308-4918. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Thao X. Le  
May 14, 2003

  
PHAT X. CAO  
PRIMARY EXAMINER